REMARKS

This AMENDMENT & RESPONSE is submitted in response to the restriction/election requirement imposed in the Office Action mailed 10/02/02. Applicant elects Group I including pending Claims 1-28 and 32 drawn to "collecting devices information" classified in class 709, subclass 224, and newly added claims 36-46. Applicant submits that the added claims directed to the system also belong to Group I. Applicant herewith cancels without prejudice non-elected claims 29-31 (Group II) and Claims 33-35 (Group III) and reserves the right to represent such claims in this or a related patent application.

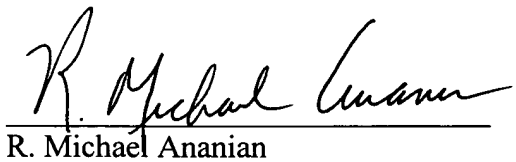
A marked-up version of paragraphs and claims amended as above is attached herein, entitled **Version with Markings to Show Changes Made**. For the Examiner's convenience, a clean copy of all pending claims is attached, entitled "**Appendix A: Pending Claims**".

Enclosed is our check to cover the cost of added claims not already paid for. Two independent claims (Claims 29 and 33) and four dependent claims (Claims 30, 31, 34, and 35) have been cancelled and one new independent claim (Claim 36) and ten new dependent claims (Claims 37-46) have been added. While Applicant believes that no further fees are due beyond those paid for at this time, the Commissioner is authorized to charge any fees that may be due as a result of filing this amendment, including additional claims fees not already paid for, or other fees that have not been separately paid, to Deposit Account 50-2319 (Order No. 125196-00043 [A-67525/RMA]).

Respectfully submitted,

DORSEY & WHITNEY LLP

Dated: 31 October 2002

By: 

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29. (Cancelled) A read connection information command for collecting connecting information for components coupled to a server, said components selected from the group consisting of bus adapters, device controllers, and devices coupled to said device controllers, said read connection information command comprising:

a direct command operation code field identifying the command to be executed; and

an allocation length field indicating the number of bytes the initiator has allocated for information returned in connection with execution of said command.

30. (Cancelled) The read connection information command in Claim 29, wherein said command returns connection information selected from the group consisting of an identifier of the Initiator issuing the command, an identifier of the controller receiving the command, an identifier of the partner controller, and combinations thereof.

31. (Cancelled) The read connection information command in Claim 29, wherein said identifier of the Initiator issuing the command comprises a WWN of the Initiator issuing the command, said identifier of the controller receiving the command comprises a WWN of the controller receiving the command, and said identifier of the partner controller comprises a WWN of the partner controller.

33. (Cancelled) A storage subsystem controller comprising:

a processor;

a memory coupled to said processor storing procedures and data, said data including a host interface connection table storing a host interface identifier and at least one storage system controller identifier, said procedures including a configuration client procedure;

a host interface input/output processor; and

a storage device interface input/output processor.

34. (Cancelled) The storage subsystem in Claim 33, wherein:

said storage subsystem comprises a RAID disk array storage subsystem;

said host interface input/output processor comprises a Fibre Channel input/output processor;

said host interface identifier comprises a Fiber Channel input/output processor WWN; and

said configuration client communicating configuration and control commands to said storage array controller.

35. (Cancelled) The storage subsystem in Claim 34, wherein said configuration client communicates said configuration and control commands to said storage array controller via a configuration server.

36. (New) A system for collecting connection information for a network computer system comprising:

a server;

at least one device controller coupled to said server by a first communication channel;

a client coupled in communication with said server;

means querying said server to identify all host bus adapters coupled thereto;

means querying each host bus adapter to identify all device controllers attached on said communication channel;

means issuing a read connection information command to said device controller and returning the connection results determined by said command including identifying all devices coupled to said device controller; and

means storing the returned connection results in a data structure.

37. (New) The system in Claim 36, wherein said host bus adapters comprise Fibre Channel arbitrated loop bus adapters and said read connection information command comprises a Read Fibre Connection Information command.

38. (New) The system in Claim 37, wherein said Read Fibre Connection Information command returns a fibre channel port WWN of a device controller.

39. (New) The system in Claim 38, wherein said Read Fibre Connection Information command returns a host bus adapter WWN of a fibre channel host bus adapter to which an array storage device is connected.

40. (New) The system in Claim 36, wherein said a read connection information command comprises: instructions for collecting connecting information for components coupled to said server, said components selected from the group consisting of bus adapters, device controllers, and devices coupled to said device controllers; and has a command structure including:

(i) a direct command operation code field identifying the command to be executed; and

(ii) an allocation length field indicating the number of bytes the initiator has allocated for information returned in connection with execution of said command.

41. (New) The read connection information command in Claim 40, wherein said read connection information command returns connection information selected from the group consisting of an identifier of an initiator issuing the command, an identifier of the controller receiving the command, an identifier of the partner controller, and combinations thereof.

42. (New) The read connection information command in Claim 40, wherein said identifier of the Initiator issuing the command comprises a WWN of the Initiator issuing the command, said identifier of the controller receiving the command comprises a WWN of the controller receiving the command, and said identifier of the partner controller comprises a WWN of the partner controller.

43. (New) The system in Claim 36, wherein said connection results include a server identifier, a host bus adapter identifier corresponding to said server, and at least one device controller identifier corresponding to a device controller coupled to said host bus adapter.

44. (New) The system in Claim 36, wherein said data structure comprises a server identification table and at least one host bus adapter connection table associated with a particular host bus adapter.

45. (New) The system in Claim 44, wherein each said server identification table stores at least one server identifier, and each host bus adapter is linked to at least one server table by a pointer and stores at least one device controller identifier.

46. (New) The system in Claim 36, wherein:

said means querying said server to identify all host bus adapters coupled thereto includes at least a first computer program instruction;

said means querying each host bus adapter to identify all device controllers attached on said communication channel includes at least a second computer program instruction;

said means issuing a read connection information command to said device controller and returning the connection results determined by said command including identifying all devices coupled to said device controller includes at least a third computer program instruction; and

said means storing the returned connection results in a data structure includes at least a fourth computer program instruction.

Appendix A: Pending Claims

IN THE CLAIMS:

1. (Unchanged) A method for collecting connection information for a computer system having a server, at least one device controller coupled to said server by a first communication channel, and a client coupled in communication with said server, said method comprising steps of:

(a) querying said server to identify all host bus adapters coupled thereto;

(b) querying each host bus adapter to identify all device controllers attached on said communication channel;

(c) issuing a read connection information command to said device controller and returning the connection results determined by said command including identifying all devices coupled to said device controller; and

(d) storing the returned connection results in a data structure.

2. (Unchanged) The method in Claim 1, wherein said connection results include a server identifier, a host bus adapter identifier corresponding to said server, and at least one device controller identifier corresponding to a device controller coupled to said host bus adapter.

3. (Unchanged) The method in Claim 1, wherein said data structure comprises a server identification table and at least one host bus adapter connection table associated with a particular host bus adapter.

4. (Unchanged) The method in Claim 3, wherein each said server identification table stores at least one server identifier, and each host bus adapter is linked to at least one server table by a pointer and stores at least one device controller identifier.

5. (Unchanged) The method in Claim 4, wherein said host bus adapter identifier comprises a first WWN and said device controller identifier comprises a second WWN.

6. (Unchanged) The method in Claim 1, wherein said host bus adapters comprise fibre channel arbitrated loop bus adapters.

7. (Unchanged) The method in Claim 1, wherein said communication channel comprises a Fiber Channel arbitrated loop channel.

8. (Unchanged) The method in Claim 1, wherein said device controllers comprise storage device array controllers.

9. (Unchanged) The method in Claim 1, wherein said device controllers comprise RAID storage array controllers.

10. (Unchanged) The method in Claim 1, wherein said data structure comprises a host bus adapter connection table.

11. (Unchanged) The method in Claim 1, wherein said computer system comprises a distributed computer system having a plurality of servers and a plurality of storage subsystems.

12. (Unchanged) The method in Claim 1, wherein said computer network includes a storage area network (SAN).

13. (Unchanged) The method in Claim 3, wherein said storage area network includes a RAID.

14. (Unchanged) The method in Claim 1, wherein said device comprise multiple storage subsystems connected to multiple server systems.

15. (Unchanged) The method in Claim 12, wherein said method further comprises the step of sending messages using a messaging protocol that permits a storage configuration tool to identify storage subsystems on said storage area network.

16. (Unchanged) The method in Claim15, wherein said messaging protocol is substantially independent of the operating system and channel type.

17. (Unchanged) The method in Claim 1, wherein said host bus adapters comprise Fibre Channel arbitrated loop bus adapters and said read connection information command comprises a Read Fibre Connection Information command.

18. (Unchanged) The method in Claim 17, wherein said Read Fibre Connection Information command returns a fibre channel port WWN of a device controller.

19. (Unchanged) The method in Claim 18, wherein said Read Fibre Connection Information command returns a host bus adapter WWN of a fibre channel host bus adapter to which an array storage device is connected.

20. (Unchanged) The method in Claim 1 wherein said connection results are returned to said client.

21. (Unchanged) The method in Claim 1, wherein said connection results identify all connections between a device controller and a server to said client.

22. (Unchanged) The method in Claim 1, wherein said server comprises an configuration server application software computer program executing on a server computer, and said client comprises a configuration client application software computer program executing on a computer selected from the group consisting of a client computer and said server computer.

23. (Unchanged) The method in Claim 1, wherein said server computer includes a plurality of host bus adapters and said disk array controller includes a plurality of Fibre Channel Ports, each of these host bus adapters and fibre channel ports being associated with a WWN.

24. (Unchanged) The method in Claim 22, wherein said configuration server application software computer program allows specific configuration and control commands to be sent by the server computer to the storage array controller from the configuration client.

25. (Unchanged) The method in Claim 22, wherein said storage array controller comprises a Fibre Channel compliant RAID controller.

26. (Unchanged) The method in Claim 22, wherein said configuration server application software computer program allows information from said device controller to be sent to the configuration client.

27. (Unchanged) The method in Claim 1, further comprising performing said steps (a)-(d) for each of a plurality of said servers and for each host bus adapter coupled to each said server.

28. (Unchanged) The method in Claim 1, wherein at least one of said steps (a)-(d) are performed by said server upon instruction from said configuration client.

32. (Unchanged) A computer program product for use in conjunction with a computer system having a server, at least one device controller coupled to said server by a first communication channel, and a client coupled in communication with said server, the computer program product

comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism, comprising:

a program module that directs computer system components to function in a specified manner including collecting connection information for said computer system, the program module including instructions for:

(a) querying said server to identify all host bus adapters coupled thereto;

(b) querying each host bus adapter to identify all device controllers attached on said communication channel;

(c) issuing a read connection information command to said device controller and returning the connection results determined by said command including identifying all devices coupled to said device controller; and

(d) storing the returned connection results in a data structure.

36. (New) A system for collecting connection information for a network computer system comprising:

a server;

at least one device controller coupled to said server by a first communication channel;

a client coupled in communication with said server;

means querying said server to identify all host bus adapters coupled thereto;

means querying each host bus adapter to identify all device controllers attached on said communication channel;

means issuing a read connection information command to said device controller and returning the connection results determined by said command including identifying all devices coupled to said device controller; and

means storing the returned connection results in a data structure.

37. (New) The system in Claim 36, wherein said host bus adapters comprise Fibre Channel arbitrated loop bus adapters and said read connection information command comprises a Read Fibre Connection Information command.

38. (New) The system in Claim 37, wherein said Read Fibre Connection Information command returns a fibre channel port WWN of a device controller.

39. (New) The system in Claim 38, wherein said Read Fibre Connection Information command returns a host bus adapter WWN of a fibre channel host bus adapter to which an array storage device is connected.

40. (New) The system in Claim 36, wherein said a read connection information command comprises: instructions for collecting connecting information for components coupled to said server, said components selected from the group consisting of bus adapters, device controllers, and devices coupled to said device controllers; and has a command structure including:

(i) a direct command operation code field identifying the command to be executed; and

(ii) an allocation length field indicating the number of bytes the initiator has allocated for information returned in connection with execution of said command.

41. (New) The read connection information command in Claim 40, wherein said read connection information command returns connection information selected from the group consisting of an identifier of an initiator issuing the command, an identifier of the controller receiving the command, an identifier of the partner controller, and combinations thereof.

42. (New) The read connection information command in Claim 40, wherein said identifier of the Initiator issuing the command comprises a WWN of the Initiator issuing the command, said identifier of the controller receiving the command comprises a WWN of the controller receiving the command, and said identifier of the partner controller comprises a WWN of the partner controller.

43. (New) The system in Claim 36, wherein said connection results include a server identifier, a host bus adapter identifier corresponding to said server, and at least one device controller identifier corresponding to a device controller coupled to said host bus adapter.

44. (New) The system in Claim 36, wherein said data structure comprises a server identification table and at least one host bus adapter connection table associated with a particular host bus adapter.

45. (New) The system in Claim 44, wherein each said server identification table stores at least one server identifier, and each host bus adapter is linked to at least one server table by a pointer and stores at least one device controller identifier.

46. (New) The system in Claim 36, wherein:

said means querying said server to identify all host bus adapters coupled thereto includes at least a first computer program instruction;

said means querying each host bus adapter to identify all device controllers attached on said communication channel includes at least a second computer program instruction;

said means issuing a read connection information command to said device controller and returning the connection results determined by said command including identifying all devices coupled to said device controller includes at least a third computer program instruction; and

said means storing the returned connection results in a data structure includes at least a fourth computer program instruction.

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